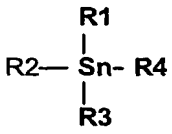
CLAIMS:

Claims

1. Catalytic composition for esterification, transesterification and polycondensation reactions containing a mixture of at least one organotin compound (compound I) of the general formula (I):



(formula I)

wherein

- R1 is selected from the group of linear, branched or cyclic alkyl groups having 1 to 40 carbon atoms, aryl groups having 1 to 40 carbon atoms, or substituents selected from the group: -X-R^A, wherein R^A is -CN, -COOH, -COO-methyl, -COO-ethyl, -COO-n-propyl, -COO-iso-propyl, -COO-n-butyl, -COO-2-butyl, -COO-iso-butyl, -COO-tert-butyl, -COO-n-pentyl, -COO-isopentyl, -COO-neo-pentyl, -COO-tert-pentyl, -COO-hexyl, -COO-heptyl, -COO-n-octyl, -COO-iso-octyl, -COO-2-ethyl-1-hexyl, -COO-2,2,4-trimethylpentyl, -COO-nonyl, -COO-decyl, -COO-dodecyl, -COO-n-dodecyl, -COO-cyclopentyl, -COO-cyclohexyl, -COO-cycloheptyl, -COO-methylcyclohexyl, -COO-vinyl, -COO-1-propenyl, -COO-2-propenyl, -COO-naphtyl, -COO-anthranyl, -COO-phenanthryl, -COO-o-tolyl, -COO-p-tolyl, -COO-m-tolyl, -COO-tolyl, -COO-ethylphenyl, -COO-mesityl, -COO-benzyl, -COO-phenyl, $-COOC_2H_4OH$, $-COOC_3H_6OH$, $-COOC_4H_8OH$, $-COOCH_2C(CH_3)_2CH_2OH$; and -X- is $-CH_2-$, $-C_2H_4-$, $-C_3H_6-$, $-C_4H_8-$, $-C_5H_{10}-$, or $-C_6H_{12}-$;
- R2 is selected from the groups of linear, branched or cyclic alkyl groups having 1 to 40 carbon atoms, aryl groups having 1 to 40 carbon atoms and anionic ligands with O-coordination of the group selected from -O, -OH, linear, branched or cyclic alkyl or arylcarboxy groups

having 1 to 40 carbon atoms, linear, branched or cyclic alkyl-, and aryl alcoholate groups having 1 to 40 carbon atoms;

- R3 and R4 independently each are selected from the groups of anionic ligands with O-coordination of the group selected from -O, -OH, linear, branched or cyclic alkyl groups or arylcarboxy groups having 1 to 40 carbon atoms, linear, branched or cyclic alkyl-, and aryl alcoholate groups having 1 to 40 carbon atoms and anions of a mineral acid selected from the group of sulphate, sulphite, phosphate, halogen- or pseudohalogen anion

and at least one compound (compound II) according to one of the formulae (II), (III) and/or (IV),

$X_m(R')_n$ (Formula II)

$O=X_m(R')_o$ (Formula III)

$(O=)_rX_mO_p(R')_q$ (Formula IV)

wherein X is a heteroatom selected from the group consisting of N, P, Si, Cl, Br, I or S,

- m is an integer from 1 to 5,
- n is an integer from 1 to 5,
- o is an integer from 1 to 5,
- p is an integer from 0 to 5,
- q is an integer from 0 to 5,
- r is an integer from 0 to 3, wherein
- R' in formula (II) denotes n different or identical groups, each being independent from each other selected from the group of linear, branched or cyclic alkyl groups having 1 to 40 carbon atoms, aryl groups having 1 to 40 carbon atoms, anionic ligands with O-coordination selected from the group of -O, -OH, linear, branched or

cyclic alkyl-, and aryl alcoholate groups having 1 to 40 carbon atoms, H, Cl, Br, NH_4^+ or a metal ion,

- R' in formula (III) denotes o different or identical groups, each being independent from each other selected from the group of linear, branched or cyclic alkyl groups having 1 to 40 carbon atoms, aryl groups having 1 to 40, anionic ligands with O-coordination selected from the group of -O, -OH, linear, branched or cyclic alkyl-, and arylalcoholate groups having 1 to 40 carbon atoms, H, Cl, Br, NH_4^+ or a metal ion,
- R' in formula (IV) denotes q different or identical groups, each being independent from each other selected from the group of linear, branched or cyclic alkyl groups having 1 to 40 carbon atoms, aryl groups having 1 to 40, anionic ligands with O-coordination selected from the group of -O, -OH, linear, branched or cyclic alkyl-, and arylalcoholate groups having 1 to 40 carbon atoms, H, Cl, Br, NH_4^+ or a metal ion.

2. Catalytic composition according to claim 1, characterized in that the metal ion is selected from NH_4, Li, Na, K, Rb, Cs, Mg, Ca, Sr, Ba, Zn, B, Al, Sc, Y.

3. Catalytic composition according to claim 1 or 2, characterized in that said compound II corresponds to phosphites, phosphines, phosphonic acid esters, pyrophosphates, alkaline halogenides, earth alkaline halogenides, aluminum halogenides.

4. Catalytic composition according to any one of claims 1 to 3 characterized in that the molar ratio of said compound I to said compound II is in the range of 1:0,001 to 1:200, in particular 1:0,01 to 1:20.

5. Catalytic composition according to any one of claims 1 to 4, further containing suspension agents or solvents.

6. Process for the continuous or batchwise catalysis of esterification, transesterification, polyesterification, polytransesterification reactions of an alcohol and an acid or acid derivative, such as an ester, anhydride or halogenide, characterized by employing a catalytic composition according to any one of claims 1 to 5.

7. Process according to claim 6, characterized by employing an amount of said compound I in the range of 0.1 to 1 % by weight (as Sn), in particular 10 to 200 ppm (as Sn) in relation to the acid or ester to be reacted.

8. Process according to claim 6 or 7, characterized by employing a concentration of said compound II in the range of 0.0001 ppm to 1% by weight, in particular 10 to 200 ppm in relation to the acid or ester to be reacted.

9. Process according to any of claims 6 to 8, characterized by reacting a dicarboxylic acid or a dicarboxylic acid derivative with a divalent alcohol in a polyesterification reaction.

10. Process according to any one of claims 6 to 8, characterized by employing derivatives of mono-, di, or polycarboxylic acids being selected from esters or halogenides.

11. Process according to any one of claims 6 to 10, characterized by reacting hydroxycarboxylic acids or derivatives of hydroxycarboxylic

acids in an esterification, transesterification, polyesterification or polytransesterification reaction.

12. Process according to claim 11, characterized by employing derivatives of hydroxycarboxylic acids being selected from esters or ethers.

13. Process according to any one of claims 6 to 12, characterized by employing a solvent or suspending agent being added to said compound I and/or II .

14. Process according to claim 13, characterized by employing an alkane mono-, di- or polyvalent alcohol as solvent or suspending agent.

15. Process according to anyone of claims 6 to 14, characterized by employing the same solvent and/or suspending agent during manufacturing of the catalytic composition and said esterification, transesterification, polyesterification or polytransesterification reaction.

16. Process according to anyone of claims 6 to 15, characterized by employing a different solvent and/or suspending agent during manufacturing of the catalytic composition and said esterification, transesterification, polyesterification or polytransesterification reaction.

17. Process according to claims 14 or 15, characterized by employing a solvent being selected from the group of mono-, di- or polyvalent alcohols being reacted in said esterification, transesterification, polyesterification or polytransesterification reaction.

18. Polyester for bottles, films, foils, yarn and/or molded padding, or resins for powder coatings or technical synthetic materials, obtainable by a process according to any one of claims 6 to 17.

19. Polyester or resins according to claim 18, wherein said polyester is selected from the group of polyethylene terephthalate, poly-2,2-dimethylpropyl-1,3-terephthalate, polypropylene terephthalate, polydiethyleneglycol terephthalate, polybutylene terephthalate, polynaphthalene terephthalate, or polyethylene naphthalate.